TO: Governor's STEM Council Advisory Council

FROM: Jeff Weld, Executive Director – Governor's STEM Advisory Council

DATE: January 30, 2011

RE: Summary – Governor's STEM Advisory Council Meeting 2

Governor's STEM Advisory Council Meeting II, Jan. 25, 2012, Principal Financial Group

SUMMARY

Meeting II was an expanded Advisory Council meeting to include all committee volunteers and private sector and nonprofit guests. The theme was Business and Community Partnerships in STEM, with the goal to connect businesses and organizations to STEM Council activities. Topics A through H were covered. Please inform Jeff Weld (jeff.weld@uni.edu) of any needed adjustments to this summary.

ATTENDEES*
The roster of those present can be found at the end of this summary.

A. **WELCOME** by Co-Chairs Lt. Governor Reynolds and President Allen. The Lt. Governor highlighted the strong foundation of business-education partnerships in our state and acknowledged the many business and nonprofit leaders in attendance, reminding all attendees that through partnership we will be able to fulfill the key goal of the STEM Advisory Council, which is to map STEM education to economic development, foster innovation in research and promote entrepreneurship for the students in Iowa. President Allen acknowledged a gap between the educational preparation and workforce readiness of too many graduates, calling upon the input and resources of Iowa's private sector to help us close the gap. He cited our well-known case for change, and the significant step today's meeting represents.

B. **KEYNOTE** by Principal Financial Group Senior Vice President and Chief Information Officer Gary Scholten highlighted the threats and opportunities facing major employers of STEM talent. Presentation slides and speaker biography are posted at www.iowamathscience.org/exec_comm

C. **BUSINESS/COMMUNITY/EDUCATION PANEL** moderated by Grinnell College President Raynard Kington aimed to demonstrate existent partnerships in Iowa, and their outcomes. Cindy Dietz of Rockwell Collins, Leann Jacobsen of the Technology Association of Iowa, Michelle Gowdy of Pioneer Hi-Bred, and Craig Johnson of the Iowa Academy of Science profiled their programs. President Kington framed the global

context for our Iowa learners by pointing out that Grinnell College receives 10 applications for each freshman seat, and that 10 percent of applicants, of whom 40 to 50 percent bring perfect SAT mathematics scores, are from China. All presentation slides and speaker biographies are posted at www.iowamathscience.org/exec_comm.

D. **BIG QUESTION ROUNDTABLE** discussions broke attendees into three groups: (1) Role of business and nonprofits in STEM teacher recruitment (facilitated by DMACC President Rob Denson); (2) business and nonprofit local partnerships in STEM (facilitated by Iowa Children's Museum Director Deb Dunkhase); and (3) the role of business and nonprofits in statewide systemic STEM (facilitated by Council Executive Director Jeff Weld).

(1) What could be the role of business and nonprofits in STEM Teacher recruitment, training and professional development?

Facilitator: Rob Denson, Des Moines Area Community College

[Here are the results from each table, indicating their suggestions for Not-For-Profit and Business suggested actions]]

TABLE 1: Not-for-Profits Could…

Teacher Recruitment:

- Must recruit teachers into STEM
- Tough to attract without salary equality ($) – Education is an investment
- Small/rural – big issue – need statewide
- Trust and culture – need to attend to this
- Work with universities
    - Younger teachers – offer educational opportunities
    - Pay/benefits/opportunities – scholarships
    - Apprentice model – but need to ensure teacher quality
- THINK OUTSIDE BOX – Who is my child's teacher? Employees

Training:

- Commits to training in summer – should be paid for that time
- Change calendar
- Get away from seat time
- Technology
- Culture of classroom – free us from textbooks

Goal – All districts to go Wi-Fi (technology available statewide)

Badges – if clarify competencies

- Mobile
- Modular
- Personalized

Business Should:

- Support monetarily teach learning – grow this
- Externship – improve on this model
- Increase relationship with education partners
- Seek out opportunities to work with educators
- Hire employees and allow them to "teach" as well (release time)
- Use "Amana Golf" idea – companies (Amana) "hired" golfers and gave them benefits so they could attract major golfers (Health club benefits, technology)
- Pressure to be a voice for STEM education – support good teachers
- Help "quality of living"
- Help support education reform – easier to change
    - Calendar for example
    - Ongoing learning for teachers rather than just summer time

TABLE 2: Not-for-Profits Could:

- Schools/Districts should communicate needs to local businesses
- Possibly use technology to connect with businesses (social networking)
- Three components need to be interconnected:
    - Teacher preparation programs
    - Businesses
    - Pk-12 Education
- Within Teacher Preparation Programs, different programs (i.e. College of Science and College of Education) need to communicate and work together to train pre-service teachers in both content and pedagogy.

Businesses Should:

- Local businesses should provide support for local programs that provide STEM education for students
    - Businesses providing financial support for programs and teacher support
- With support, businesses could use opportunity to marketability for their workplace
- For example, UNI has partnerships with businesses that employ teachers to do externships
    - Benefits for workplace, teachers and students
    - Additionally gives teachers academic credit through university and compensation
- Provide for school's technological needs (fund mobile labs, software)

TABLE 3: Not-for-Profits Could

Iowa Public Television

- Already involved in professional development for teachers – Mom's Night Out in partnership with IMSEP
- AEA- Biggest concern is scale – Help to find ways to reach all Pk-12 teachers and pre-service teachers across the state

Schools and organizations could require participation and collaboration among their faculty and area businesses, STEM field trips at particular grade levels, STEM involvement at Higher Ed institutions.

Iowa Public TV has proposed that they become the repository for STEM resources through Equella.

- Need a repository (resource warehouse) that can serve as a one-stop access for all STEM activities and resources

Provide mentors for pre-service teachers

Recruitment

Training

Professional Development

Businesses Should:

- Place-based professional development (businesses host the professional development sessions)
- Increase internship and externship experiences; provide more flexibility in the externship program
- Provide funding for STEM activities
    - Field trips
    - Service learning projects
- Provide classroom materials and resources, including mentors for project-based learning (software, time and personnel, consumables, technology)
- Figure out ways to reach all students (rural areas). Increase regional partnerships
- Target K-3 teachers to help them feel capable and invested in math and science teaching
- Help organizations to break down bureaucracy
- Provide professionalism
- Create a "systems organization" model
- Make business demands very clear to school boards
- Hire and maintain education liaisons

TABLE 4: Not-for-Profits Could:

- Serve as trainers of new teachers
- Promote own profession and encourage students to go into teaching

- Recruit from industry
- Encourage business and industry folks to participate in alternative licensure programs
- Create competency-based programs that provide licensure credentials
- Embed cultural competency across the program sequence so that all candidates can work with diverse students
- Work on teaching courses that focus on managing the instructional environment that is more project-based, inquiry-based and active
- Collaborate and facilitate connectivity across Pk-12 when it comes to instruction – instead of transferring credit, transferring knowledge

Business Should:

- Create non-profit liaisons who should work with Pk-12 learners
- Sponsor summer programs that engage and inspire STEM-related activities
- Act as advocates of education and engender other businesses to partner with schools
- Provide consistent support and not just spasms of connectivity
- Sponsor scholarships for student teachers
- Sponsor grow-your-own candidates that will stay in the geographical area, especially in hard to staff locations

TABLE 5: <u>Not-for-Profits Could</u>:

- Provide tangible opportunities for real world applications directed to the education
- Take a look at development opportunities for the teachers vs. the student's experience (reference was Science Center)
- Schools should provide student flexibility to create creative projects and research

<u>Business Should</u>:

- Training
- Recruitment
- Professional Development
- Participate in teacher externships
- Engage in conversations with local school districts
- Talk to teachers/counselors about their needs and your business capabilities
- K-3 teachers need to feel capable in making science/math exciting
- Adopt a classroom in K-3 environment and provide resources
- Enable schools via grants/funds for handheld technology (i.e. spelling words)
- Engage with K-12 teachers to teach technology and math/science vs. the curriculum
- Give more time and mentoring
- Give teachers opportunity to intern at business (i.e. Stew Hansen) to learn more skills and teaching methods

TABLE 6: <u>Not-for-Profits Could</u>:

- See innovation as part of the solution
- Function at the top of the pyramid
- Allow innovation and creativity at the local level
- Identify bureaucratic hurdles and work to eliminate them, keeping students and global needs at the forefront
- Insist on partnering with educational entities
- Ensure teachers have information on various programs and supplements available from non-profits
- Are teachers empowered to utilize these partnerships?
- STEM initiatives and instruction follow the career and tech model for teacher credentialing
- Non-profits involved in Teacher Ed programs
- Strategic and purposeful messaging that will promote non-profit partnering and access for <u>all</u> interested faculty and students
- Students the flexibility to design their own project (i.e. how do I create a water purification system in Africa) – contextual learning
- Elevate success in academic achievement
- Require that all students stay in school until they are 18 or graduate

<u>Not-for-Profits Could</u>:

- Provide tangible opportunities for real world applications directed to the education
- Take a look at development opportunities for the teachers vs. the students experience (reference was Science Center)
- Demand we teach to the current and future needs by serving on educational advisory committees and regular communication
- Internship and Externship experiences for teachers – ongoing and follow-up
- Mentorship
- Business Council

<u>OTHER IDEAS from Entire Group:</u>

<u>Businesses Should</u>

- Share "systems" orientation – organizational structure
- Make demands/concerns known to School Boards
- Help educators know <u>what</u> they need/competencies
- Have an education liaison
- What does a STEM professional do?
- Give educational relevant real world problems
- Dialog and "space" for it
- Each reach out to each other

- Showcase businesses that are doing a good job/case studies/sharing
- Scale up what is working

Not-for-Profits Could:

- Teachers need support over summer terms
- Support for more compensation for teachers – living wage and benefits
- Accountability in the system clearly stated – outcomes clear
- Elevate success in academic achievement
- Alternative to high school – finish high school/GED
- Professional development component for externships
- Teacher orientation include a business experience
- Non-profits can be trainers

(2) Business and Local Nonprofit Local Partnerships in STEM: Globally-minded, technologically adept, diversely representative STEM graduates: How might the Council foster partnerships toward that end?

Facilitator: Deb Dunkhase, The Iowa Children's Museum (Scale-Up Committee Chair)

Participants:

Rachel Hurley, Iowa Biotech Association
Raynard Kington, Grinnell College
Catherine Swoboda, World Food Prize
Steve Triplett, ACT
Michelle Gowdy, Pioneeer
Debi Durham, Iowa Economic Development
Ted Neal, University of Iowa
Ann Watts, DMACC
Jenny Becker, Rockwell Collins
Dave Lingren, Iowa Communications Network
Craig Johnson, Iowa Academy of Science
Gary Scholten, Principal Financial Group
Sally Mason, University of Iowa
Douglas Dorner, Iowa Health
Jeanne Bancroft, Creative Connections
Kristy Black, Kirkwood Comm. College
Victoria Sharp, University of Iowa
Elizabeth Hoffman, Iowa State
Karen Zunkel, Iowa State
Isabel Montemayor, UNI
Matthew Smith, North High School

This Round Table Topic was presented to participants as an opportunity for them to give input directly to each of the Governor's STEM Advisory Council Committees. The round table group was informed by Dunkhase that their input would be delivered to each committee chair as has been done.

***Notes to Regional Networks Committee*:**

1. Utilize and study models and pre-existing partnerships!
2. Scale-up and Capitalize, i.e. panel presenters
3. Other relationships outside of Iowa? National, international, regional, industry links
4. Reach ALL parts of the state (rural in and out of school)!

5. Use IT
6. Equity opportunities for all! (women, all ages, geography, under-represented, economically disadvantaged)
7. Real face-to-face vs virtual and social networking, etc.
8. Regional coordinators need to work together
9. Potentially political
10. Fractured

***Notes to Scale-Up Committee*:**

1. All partnerships should include an educational organization!
2. Need broad community support for STEM education!
3. Partners Need some overlap in mission!
4. Focus on evaluation and measureable outcomes
5. Create an active clearinghouse of opportunities – Communicate!
6. Cannot scale-up everything. Choose just 2-3 projects
7. Be mindful of gaining consensus
8. Don't forget small, rural schools
9. Scale-Up geographically
10. Include small businesses
11. Better to have a small number of scale-up projects of broadly supported programs. We currently have too many silos.
12. Incubate new programs, scale or don't scale based on results
13. Focus on successful teachers, build on existing curriculum
14. Use resources from business and nonprofits

***Notes to Education Policy Committee*:**

1. Tax credits to businesses engaged in STEM partnerships!
2. State Stem grants requiring private match, coordinate so that one business is not asked repeatedly
3. Less policy is better (but some participants questioned this statement)
4. Involve educators and industry leaders early on when policy is being formed!
5. Early education policy has emphasized literacy… need to include math & science
6. Write, fund, and implement
7. Provide direction but allow innovation and funding for innovation that includes match from business and nonprofits
8. Accountability
9. Consolidate and reduce duplication to result in more public $$

***Notes to Technology-Enhanced Instruction for Global Learning Committee*:**

1. Technology infrastructure/support includes experts in the field
2. Open source technology to be shared with schools!
3. Potential for real workforce training

4. Workforce awareness
5. More implementation/training for professional instructors for impact
6. Skill development via nonprofits
7. Choosing the right technology tool for each task, i.e. "*Why do I need the technology?"*
8. Increased access to technology for students and parents (after hours, geographically and economically accessibility)
9. Technology cannot be a distraction, but should enable each student to learn at his/her own pace
10. Partnership guidance on technology choices
11. Utilize Nonprofit/Business partnerships for expertise

Notes to Public Awareness Committee:

1. Career Awareness, businesses can provide and promote legitimacy of opportunities!
2. Support via dollars and resources!
3. Coordinate a campaign of awareness and ideas!
4. Use a shared definition of STEM!
5. Promote broad STEM literacy beyond explicit STEM careers
6. Emphasize the importance of building on **passion**
7. Include critical thinking, communication, and creativity
8. Implement editorials that are education based, social media
9. Create a STEM marketing program
10. Use a Grassroots platform!
11. Use parents, guidance counselors, and teachers that are geographically diverse to spread the message
12. Leverage existing studies and branding (National Academy, Changing the Conversation, American Chemical Society, etc)
13. State-wide public awareness campaign using voices from Iowa STEM Companies explaining opportunities for our youth.
14. Target students, teachers, parents, etc.
15. Businesses need to educate own employees to expose their children to STEM awareness

***Notes to Learner Readiness Committee*:**

1. Use tutors!
2. Make High School externships available!
3. Make career information relevant to the real world
4. Stress the importance of organized informal learning!
5. Strengthen partnerships between formal and informal learning institutions
6. Educate parents about what constitutes learner readiness for their kids
7. Teachers/nonprofits infuse enthusiasm!
8. Promote adults and children learning together
9. Encourage preschool and family involvement
10. Start early and think of math and science as important as language arts
11. Need more professional help for pre-K and kindergarten teachers

12. Need Early Exposure!
13. Utilize guest speakers and industry tours where both students and teachers will benefit
14. Have businesses and educators talk to each other about skill needs and gaps
15. Help teachers become aware of private sector needs
16. Equal opportunity for students to enter "fast track" at later stage
17. Provide dual enrollment for high students in community colleges

***Notes to Private-Public Partnerships Committee*:**

1. Model publications
2. Job Training/Career Prep
3. Include an educational organization in a partnership
4. Include early learners
5. Special focus on family involvement and parents!
6. Internships, externships, job shadowing for middle & high school students
7. Barriers-HIPPA
8. Education programs for pre and in-service teachers through business & nonprofits. Not just secondary teachers, include elementary and middle school… and teachers in training while they're still passionate.
9. Have businesses/nonprofits come into the schools

***Notes to Stem Learner Accommodations Committee*:**

1. Actively seek mentor, role-models for under-represented students! (young people)
2. Virtual field trips
3. Catch interest early by 3rd grade! Even pre-K!
4. International mentors for students
5. Incorporate general STEM literacy for all students using appropriate grade level activities!
6. Reading, writing, math, financial, and STEM literacy
7. Close the achievement gap with test scores, ACT, SAT
8. Support from business and nonprofits for curricular activities
9. How is STEM evaluated in 8th grade plans?
10. Look at Florida program that targets inner-city kids with mentors
11. More involvement with groups that span multiple areas, i.e. WISE, WIT
12. Parental engagement!
13. Guidance counselors could be well used in STEM opportunities! Keep them informed
14. Encouragement through scholarships

Notes to Teacher Recruitment & Prep Committee:

1. Partnership between K-12 and higher-ed for teacher research experiences in summer!
2. Work to enhance pay for STEM teachers and student loan forgiveness!
3. Externships relate real world experience to students
4. Role models and mentorships

5. Use technology to bring info to teachers, hyperstream for teachers
6. Alternative continuing ed opportunities!
7. Professional learning communities to share best practices (help fund by business/nonprofits)
8. People in STEM fields encouraged to become educators, streamline re-certification
9. Alternative pathways to certification
10. Values put on education, nursing example of competitive salaries
11. Alternative pathways, get rid of red tape

(3) How might the Council invite, and what should we expect, of Iowa's private sector and nonprofits as state-level partners in STEM?

Facilitator: Jeff Weld, Council Executive Director

Participants:

Leann Jacobson, Tech. Assoc of IA
Jordan Cohen, UI
Gene Lutz, UNI
Michelle Temeyer, ISU Extension
Don Frazer, SynGest
Alissa Jourdan, Kemin Industries
Phyllis Baker, UI/UNI
Albert Wiggins, G.W. Carver Academy
Greg Olenick, Ellison Technologies
Tom Hobson, Rockwell Collins
Elliott Smith, Iowa Bus. Coun.
Kari Webb, Spirit Lake schools
Chris Kramer, Dept. of Cult. Affairs
Nichole Myles, Putnam Museum
Ken Maguire, PLTW
David Drake, UI
Linda Bisgaard, Girl Scouts
Mary Lou Erlacher, Workplace Learning
Vaughn Halyard, Story Lounge
Angela Dethlefs-Tretin, Ia. Co. Of Fndts
Stacey VanGorp, RJ McElroy Trust
Jay Staker, ISU Extension – 4-H
Denny Presnall, Farm Bureau
Rachel Hurley, IA. Biotech. Assoc.
Michelle Rich, State Pub. Pol. Gp.
Martin Wesemann, Pella Corp.
Curt Simmons, Sci. Ctr of Iowa
Lori Schaefer Weaton, Agri-Ind. Plast.
Pat Barnes, John Deere

This Round Table Topic was orchestrated as a small-groups session involving four focal questions: How are nonprofits and business already engaged in state-level STEM? How do local investments versus statewide investment get balanced? Where might your company/agency plug in to state-level STEM? What barriers are there to your support for state-level STEM?

Table spokespersons provided key take-aways from discussion:

- Public awareness is a significant necessity to engage Iowa's business/nonprofit sectors and citizens, parents.
- In-kind contributions (peoples' time, donated equipment) needs to be part of the equation.
- The plan for implementation has to be crystal clear with clear outcomes for business to dive in.
- The variable resources challenge needs to be fixed- all sectors of the state need similar assets.
- Great care needs to be exercised in the Scale-Up process to ensure true excellence in the queue.

- Companies and nonprofits must examine their own portfolios and make decisions about local vs. state engagements.
- Business sector needs something of a clearinghouse/coordinating center of good programming to help grow. STEM-Matchmaker.com
- There needs to be effective communication about what is already taking place across Iowa.
- A business STEM advisory group is needed to focus the contributions of that sector.

E. **WORKING GROUP LUNCH/ REPORT OUT.** Nine committees convened during lunch – two infrastructure subcommittees and 7 Action Plan Working Groups. All guests and visitors were invited to join the committee meeting of preference. Nine committee chairpersons reported out on today's committee progress in a context of their charge and progress to date. The voice of business and nonprofit was incorporated into plans.

F. **STEM WORKFORCE/ECONOMIC DEVELOPMENT**. Iowa Department of Workforce Development Director Teresa Wahlert and Iowa Economic Development Authority Director Deborah Durham presented on Iowa's STEM Workforce and the Economy. A highlight of the presentation was the necessity for Iowa to take a critical look at our supply and demand issues within both STEM and other skill sets. IWD, in partnership with IEDA, is releasing an economic status report (linked at www.iowamathscience.org/exec_comm) as a benchmark to Iowa's current state. The presentation slides as well as speaker biographies are also located at www.iowamathscience.org/exec_comm.

G. **NEXT STEPS AND HORIZON EVENTS**. Director Weld pointed out upcoming relevant dates to the Council, which appear as final slide at www.iowamathscience.org/exec_comm. President Allen drew the meeting to a close by citing the significant contributions of business and nonprofit guests and members to the objective of the day – uniting the business, nonprofit and education sectors toward actions in improving STEM. Much work is on the horizon for the nine committees and the Council as a whole, with major forward movement coming in the months and year to come. All were thanked for their investment of time and wisdom, and Principal Financial Group was applauded for the wonderful job of hosting the meeting.

Adjournment. 3:00PM

Compiled by Jeff Weld

Roster of Attendees (N = 116 excluding media)
*Not all registrants attended

Lori Adams
Comfort Akwaji-Anderson
Benjamin Allen
Susan Assouline
Phyllis Baker
Jeanne Bancroft
Patrick Barnes
Jenny Becker
Linda Bisgaard
Deb Bishop
Kristy Black
Carmine Boal
Carolyn Boss
Denise Broderick
Barry Butler
Brenda Buzynski
Josh Byrnes
Kacia Cain
Lynne Campbell
John Carver
Lin Chapé
E. Mark Chelgren
Jordan Cohen
Disa Cornish
Bill Decker
Tiffany DeJager
Angela Dethlefs-Trettin
Robert Denson
Cindy Dietz
Douglas Dorner
David Drake
Deb Dunkhase
Deborah Durham
Mary Lou Erlacher
Cameron Evans
Linda Fandel
Teresa Finken
Donald Frazer
Paul Gausman
Alison Gilchrist
Jason Glass
Michelle Gowdy
Kris Groff
Vaughn Halyard
Jerry Handsaker
Joshua Hanna
Connie Hargrave
Jack Harris
Jeff Herzberg
Tom Hobson
Beth Hochstedler
Elizabeth Hoffman
Rachel Hurley
Leann Jacobson
Kari Jastorff
Stephanie Jutila
Craig Johnson
Alissa Jourdan
Raynard Kington
Chris Kramer
Jerrid Kruse
Dave Lingren
Myron Linn
Gene Lutz
Ken Maguire
Sally Mason
Yvette McCulley
Anita Micich
Wendy Mihm-Herald
Ambar Mitra
Isabel Montemayor
Nancy Movall
Nichole Myles
Ted Neal
Vince Newendorp
Valerie Newhouse
Gregory Olenick
Caitlin Oponski
Ken Osmonson
Julie Pinns
Denny Presnall
Kimberly Reynolds
Michelle Rich
Tonja Richards
Sharon Rosenboom
Sue Runyon
Amy Sandvold
Lori Schaefer Weaton
Brian Schoenjahn
Gary Scholten
Kelly Sears
Victoria Sharp
Curtis Simmons
Elliott Smith
Matthew Smith
Jay Staker
Sharon Steckman
Catherine Swoboda
Michelle Temeyer
Jeanette Thomas
Steven Triplett
Stacy Van Gorp
Teresa Wahlert
Jhonna Wallerich
Dwight Watson
Ann Watts
Kari Webb
Jeffrey Weld
Martin Wesemann
Jonathan Wickert
Albert Wiggins
C. Arthur Wittmack
Gail Wortmann
Theresa Zeigler
Isa Zimmerman
Karen Zunkel